

Please amend claim 13 as follows:

13. For an imprint lithography process, a system capable of controlling the relative orientation and the relative gap between a template and substrate surface to be imprinted comprising;

a pre-calibration stage for course movement and alignment of a template with respect to a substrate surface so that a gap is created between said template and said substrate surface; and

an orientation stage used in conjunction with said pre-calibration stage for fine movement and alignment of said template so that said gap is approximately uniform across that portion of said template that lies over said substrate surface.

Please add the following new claims:

61. A process for imprint lithography using a gap control system for course orientation and precise orientation and spacing control, the process comprising the steps of:

the gap control system orientating a template and a substrate in spaced relation to each other so that a uniform gap is created between said template and said substrate;

dispensing a liquid within said gap;

curing said liquid to hardened state within said gap; and

the gap control system separating said template and said substrate so that a pattern is transferred from said template to said substrate leaving desired features thereon.

62. The process of claim 61 wherein said dispensing step is performed either before or after establishing the gap.

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63. The process of claim 61 wherein said orientation step is performed using a template with a lithographed topography.

64. The process of claim 61 wherein said orientation step is performed using a template without a lithographed topography.

65. The process of claim 61 wherein said orientation step includes the steps of:

the gap control system performing a preliminary and course orientation alignment operation between said template and said substrate; and

the gap control system performing a fine movement and orientation alignment operation of said template with respect to said substrate so that said gap is approximately uniform across that portion of said template overlaying said substrate.

66. The process of claim 65 wherein said preliminary and course orientation alignment operation is performed by a subsystem of the gap control system.

67. The process of claim 65 wherein said fine movement and orientation alignment operation is performed by a subsystem of the gap control system.

68. The process of claim 61 wherein said curing step is performed at room temperature by exposing a UV curable liquid to UV light that causes the cured liquid to conform to the shape of the template.

69. The process of claim 61 wherein said dispensing step is performed by controllably dispensing a liquid within said gap either before or after establishing the gap, or spin coating said liquid on to the substrate surface.

70. The process of claim 69 wherein said liquid dispensing step is performed without trapping bubbles within said gap.

71. The process of claim 61 wherein said separating step is performed without shearing desired features from the substrate.

72. The process of claim 61 further comprising the step of treating the template with a low surface energy monolayer to assist in separation.

73. The process of claim 61 wherein said gap control system separates the template from the substrate with a peel and pull motion.

74. The process of claim 61 wherein said step of orientating the template about the substrate includes the step of lowering the template over the substrate so that a relatively low pressure is applied to the fluid dispensed within the gap.

75. The process of claim 61 wherein said filling step is performed by dispensing a silicon-containing liquid monomer or other organic liquids within said gap.

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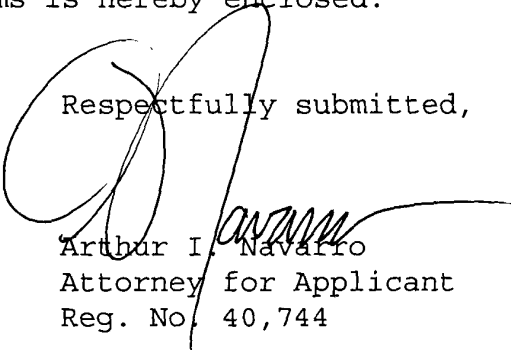
76. The process of claim 61 further comprising the step of attaching a transfer layer to said substrate surface whose material properties and thickness can be chosen to allow for the creation of high-aspect ratio structures from low-aspect ratio structures created in the cured liquid material.

REMARKS

This is an amendment before first office action pursuant to M.P.E.P. § 714.09 of an application filed under 37 C.F.R. 1.53(b). The amendment does not introduce new subject matter into the application. Furthermore, applicant has submitted a new oath and declaration referring both to the application and the amendment. A version of the amendment with marking to show the changes made is included.

Claims 1-12 have been deleted and new claims 61-74 have been added. The total number of claims have changed and the fee for the additional 4 dependent claims is hereby enclosed.

Respectfully submitted,


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